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(54) ISDN interface unit.

(57) An ISDN interface unit (20) interconnects a data processing unit (70), an ISDN (80), and an analog telephone (50) and comprises a DMA request signal generation circuit (3) for generating a DMA request signal from an 8 kHz clock signal from an ISDN line. In accordance with the request signal, PCM coded data input from the ISDN line is transferred, using DMA, to a memory of the data processing unit (70) or vice versa. Alternatively the ISDN interface unit comprises a code conversion circuit (8), and data stored in the data processing unit (70) are converted to nonlinear PCM coded data and transmitted to the ISDN line or vice versa. Further, the ISDN interface unit (20) comprises communication functions for the digital signal and for the voice band signal, a control channel signal sent from the ISDN line is interpreted, and one of these communication functions can be selected.

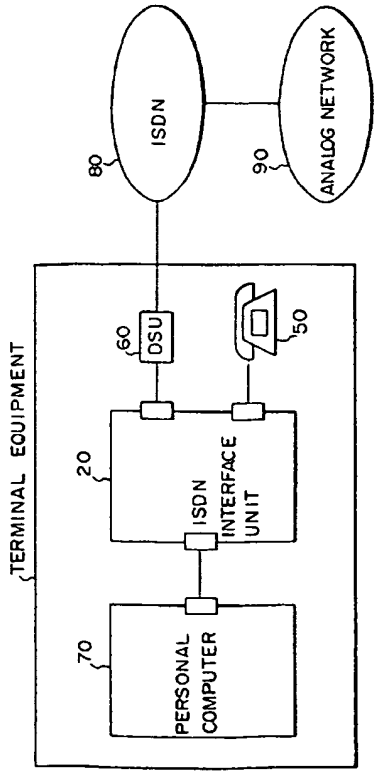

Fig. 1

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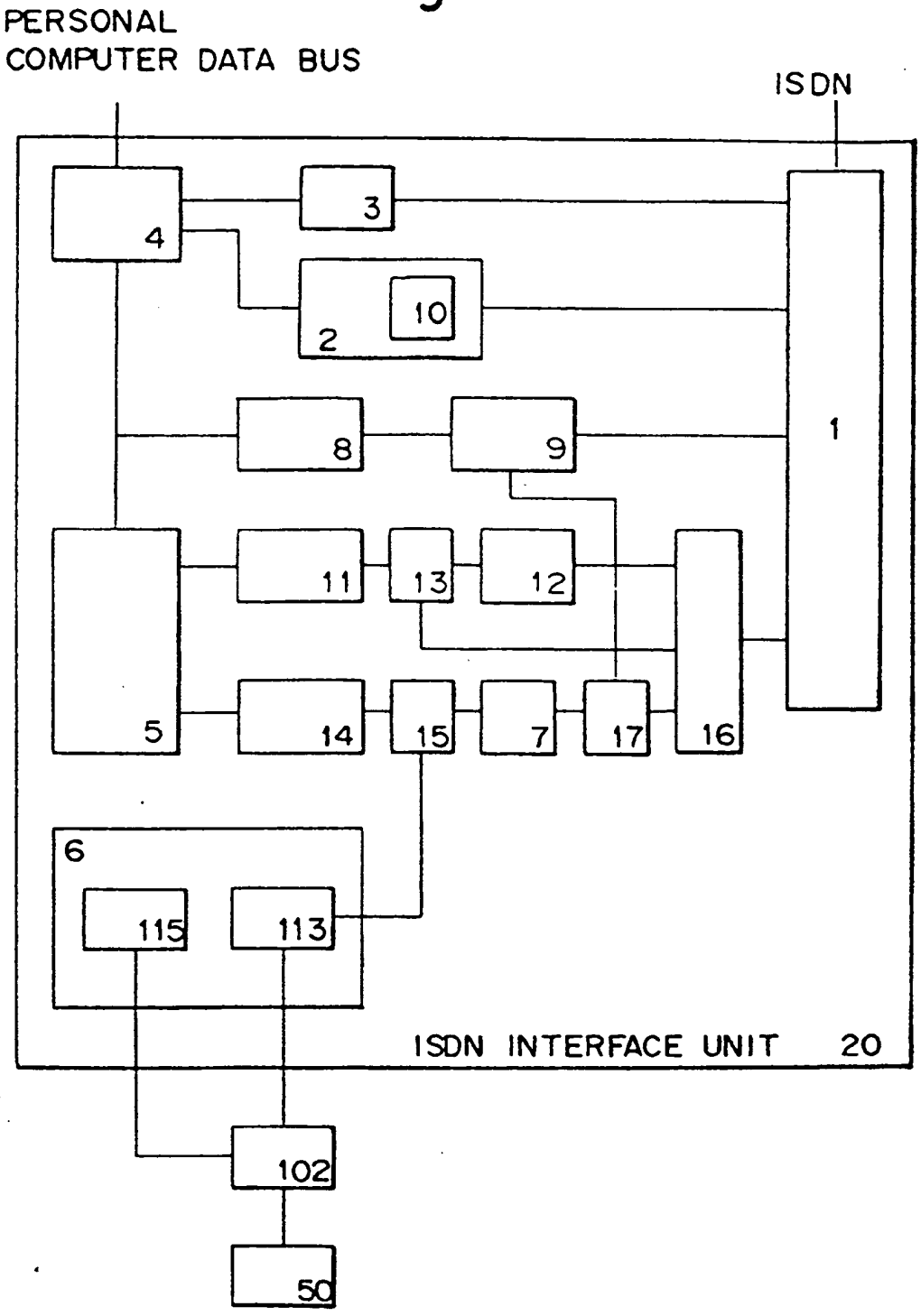
Fig . 2


PERSONAL
COMPUTER DATA BUS
ISDN
4
3
2
10
8
9
1
11
13
12
5
14
15
7
17
16
6
115
113
ISDN INTERFACE UNIT 20
102
50

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EUROPEAN SEARCH REPORT

Application Number

EP 91 31 0945

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	COMMUTATION ET TRANSMISSION vol. 11, no. 4, 1989, PARIS FR pages 55 - 66 J.B.HARL ET AL. * the whole document *	1,3	H04Q11/04 H04M11/06
Y		2,4,5,8	
A	PROCEEDINGS OF THE NINTH INTERNATIONAL CONFERENCE ON COMPUTER COMMUNICATION 30 October 1988, TEL AVIV IS pages 175 - 180 Y.DAVID * page 177, left column, paragraph 4.3; figure 2 *	1,3	
A	* page 178, left column, paragraph 1; figure 9 *	6,7	
A	ELECTRONICA vol. 36, no. 22, 18 November 1988, DEVENTER NL pages 21 - 37 D.GULLICK ET AL. * page 31; figure 9 *	1,3	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	* page 33, middle column, last paragraph *	9,10	H04Q
Y	PATENT ABSTRACTS OF JAPAN vol. 010, no. 137 (E-405)21 May 1986 & JP-A-61 001 156 (NIPPON DENKI) 7 January 1986 * abstract *	2,4,5	
E	PATENT ABSTRACTS OF JAPAN vol. 016, no. 138 (E-1186)7 April 1992 & JP-A-32 97 259 (RICOH) 27 December 1991 * abstract *	2	
X	EP-A-0 357 427 (TOSHIBA)	6,7	
Y	* the whole document *	8	

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	01 JUNE 1993	KURVERS F.J.J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.

☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid.

namely claims:

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions,
namely:

See sheet -B-

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid,

namely claims:

☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims,

namely claims:

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 31 0945

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
P,X	EP-A-0 409 622 (CANON) * the whole document *	6,7	
X	NACHRICHTEN TECHNIK ELEKTRONIK vol. 39, no. 11, 1989, BERLIN DD pages 428 - 430 , XP83441 L. WINKLER ET AL. * page 428, right column; figure 4 *	9	
P,X	WO-A-9 101 600 (RAYCHEM) * page 7, line 6 - line 11; figure 1 *	9	
X	ELECTRONIC DESIGN. vol. 38, no. 8, 26 April 1990, HASBROUCK HEIGHTS, NEW JERSEY pages 61 - 66 , XP125945 M. LEONARD * page 64; figure 2 *	10	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	01 JUNE 1993	KURVERS F.J.J.

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LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1,3 : ISDN interface unit with storage/retrieval of communication data to/from data processor's memory under DMAC in synchronism with line clock.

2. Claims 2-5 : ISDN interface unit with code conversion and adding of data from/to the ISDN line and data from/to a data processor's memory.

3. Claims 6-8 : ISDN interface unit with data link connection via either digital or analog circuitry.

4. Claims 9,10 : ISDN interface unit with ringer circuitry for analog telephone set.